J. H. Walker

PART V.

Elements of Useful KNOWLEDGE

Drawn up for the Use of Children, in Questions and Answers,

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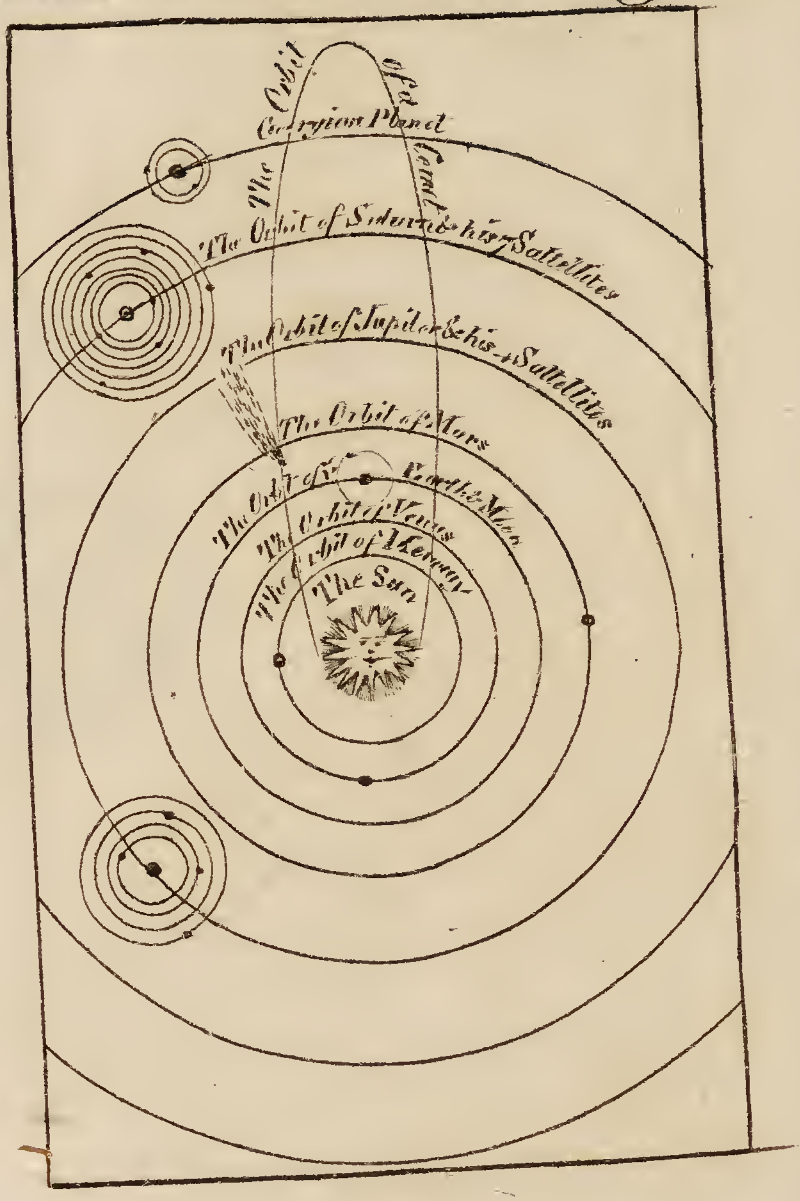
Elements of useful Knowledge *Part 5.*


The Orbit of a Comet
Georgian Planet
The Orbit of Saturn & his 7 Sattellites
The Orbit of Jupiter & his 4 Sattellites
The Orbit of Mars
The Orbit of Earth & Moon
The Orbit of Venus
The Orbit of Mercury
The Sun

The Solar System

ELEMENTS

OF USEFUL

KNOWLEDGE.

PART V.

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ASTRONOMY.

1 Q. WHAT is Astronomy?

A. The study of the Heavenly Bodies, their proper Places, Motions and Use.

2 Q. What is the Universe?

A. That wide Expanse in which all Bodies have their Existence.

3 Q. What is a System?

A. A number of Bodies, which move about one common Centre or Point.

4 Q. To what Part of the Universe do we belong?

A. To the Solar System; so called, because the Bodies which compose it move round the Sun as their Centre.

5. Q. What is the Sun?

A. A Body of Fire, which by its Warmth and Heat promotes the Growth of Vegetables, cherishes Animal Life, and raises Vapours from the Sea, without which we should have no Rain.

6 Q. What Bodies belong to the Solar System?

A. The Planets, their Moons, and the Comets.

7 Q. Name the Planets?

A. Mercury, Venus, the Earth, Mars, Jupiter, Saturn, and the Georgium Sidus.

8 Q. Are these Planets all placed at an equal Distance from the Sun?

A. They are placed at different Distances; and perform their Revolutions round it in very different Periods.

9 Q. How are the Earth and the other Planets supported?

A. They hang as it were in the Air,

without any visible Cause to support them from above, or uphold them from beneath.

10 Q. Has not the Sun any Motion then?

A. Although it always preserves its Station in the Centre of our System, yet it has a Motion on its own Axis, just like a Spinning Wheel, which keeps turning round without moving from its Place.

MERCURY.

11 Q. Which is the nearest Planet to the Sun?

A. Mercury, which performs a Revolution round it in three Months, travelling nearly as fast again as the Earth. It is so near the Sun, that its Heat is sufficient to make Water boil. It sometimes comes between us and the Sun, when it appears like a little black Spot.

VENUS.

12 Q. Which is the next Planet to Mercury?

A. Venus; whose Revolution round the Sun is completed in about seven Months and a half: it turns round also upon its own Axis in twenty-three Hours and a half, which gives it a Day and Night something less than ours. Venus is the brightest of all the heavenly Bodies: It is sometimes a Morning and sometimes an Evening Star.

THE EARTH.

13 Q. How is the Earth situated in the Solar System?

A. It is the third Planet from the Sun, about which it moves in the Space of a Year; and turns round on its own Axis every twenty-four Hours, making a Day and Night.

The Earth travels with us at the amazing Rate of fifty-eight thousand Miles an Hour, although we are not sensible of any Motion at all.

14 Q. Why are we insensible of the Motion of the Earth?

A. Because the Atmosphere, the Clouds, and all surrounding Objects, move with us at the same Time.

15 Q. What Benefit do we derive from the Earth's daily or diurnal Revolution?

A. It is the Cause of Day and Night throughout the World at different Times: were it not for this Motion, one Part of the World would remain six Months in extreme Cold and Darkness, while the other Part would be scorched with Heat, and wearied out with continual Light.

16 Q. What Changes are effected by the annual or yearly Revolution of the Earth?

A. In the Course of the Earth's annual Revolution, the different Seasons of Spring, Summer, Autumn and Winter are produced.

MARS.

17 Q. Which Planet moves next round the Sun?

A. Mars, in something less than two of our Years; and performs its diurnal Revolution in about twenty-five Hours. It is the smallest of the Planets except Mercury; and is remarkable for its red Colour.

JUPITER.

18 Q. Which Planet do you next describe?

A. Jupiter; which is a thousand times larger than the Earth, and much larger than any of the other Planets: It revolves round the Sun in nearly twelve Years, and performs its diurnal Revolution in ten Hours.

19 Q. Is there any Thing remarkable in the Appearance of Jupiter?

A. A number of Lines or Spots are seen on its Surface, called Jupiter's Belts: they are supposed to be formed by the Swiftness of its diurnal motion drawing its Vapours and Clouds into Streaks.

SATURN.

20 Q. What are the Periods of Saturn's Revolutions?

A. It has been discovered by Dr. Herschel to revolve on its own Axis in ten Hours and a quarter: its annual Revolution is completed in twenty-nine Years and a half.

21 Q. What is meant by Saturn's Ring.

A. A broad thin Ring, set edge ways round it at a Distance from its Surface,

GEORGIUM SIDUS.

22 Q. Name the next Planet.

A. Georgium Sidus; which was discovered by Dr. Herschel, and so named out of Respect to his Majesty George the Third.

23 Q. What do you observe of the Revolutions of this Planet?

A. It performs its Journey round the Sun in eighty-three Years; but owing to its great Distance, its diurnal Revolution has not been ascertained.

THE MOON.

24 Q. Of what Nature is the Moon?

A. It is of itself a dark Body, and shines only by Reflection; receiving its Light, like our Earth, from the Sun.

25 Q. What is the Situation of the Moon?

A. It is a constant Attendant on our Earth, revolves round it every Month, and in that Space of Time shews its various Appearances of new, horned, full, &c. Being the nearest to us, it appears the largest, though in Reality it is the smallest of all the heavenly Bodies.

26 Q. What occasions those different Appearances of the Moon?

A. When it is on that Side of the Earth next the Sun, the dark Side is turned towards us, it is then called the Change; when it has passed through one Quarter of its Orbit we see half of its enlightened Part; when half Way, it shews a full Face; and when three Quarters round, it appears a Half-Moon again.

27 Q. What Appearance has the Moon through a Telescope?

A. Through a good Glass it appears to possess Land and Water, Mountains and Valleys, besides a Volcano or burning Mountain.

28 Q. What Benefit do we receive from the Moon?

A. Besides enlightening our dark Nights, by its Influence it agitates and purifies the Sea, and regulates the Tides.

29 Q. As the Earth travels at such a prodigious Rate, how is it that the Moon is not left behind?

A. Because the Moon is kept near the Earth by a secret Power, called Attraction of Gravitation, preserving it in its Orbit, so that the Moon must accompany the Earth let its Motion be ever so swift. By this Law also the Planets are kept in their Orbits round the Sun.

ECLIPSES.*

30 Q. What is an Eclipse of the Sun?

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* The annexed Plate represents the Moon in its Orbit round the Earth, while that moves in an Orbit about the *Sun*; one Part being enlightened by its Rays, while a Shadow is cast from the opposite Side.

A. It is caused by the Moon passing between us and the Sun, and as the Moon is a dark Body, it for a Time hinders the Sun's Light.

31 Q. What is an Eclipse of the Moon?

A. It is occasioned by the Earth being in a direct Line between that and the Sun, by which Means the Earth's Shadow appears like a dark Body passing over the Moon.

32 Q. When must Eclipses happen?

A. An Eclipse of the Sun can never happen but at the new Moon; and an Eclipse of the Moon when it is at the Full.

33 Q. Have the other Planets Moons as well as our Earth?

A. Venus has one, Jupiter four, Saturn seven, and Georgium Sidus two.—These with our Moon are called Satellites, or secondary Planets.

34 Q. Are there any other Planets belonging to our System besides the seven already named?

A. Other Bodies have been discovered, supposed to be primary Planets, a particular Description of which must be left for future Observations. Some Astronomers reckon also a greater Number of secondary Planets.

35 Q. Are the Planets well accommodated for Inhabitants?

A. It is the Opinion of Philosophers, that the Almighty, who never created any Thing in vain, formed these as well as our Earth to be the Habitations of intelligent Beings.

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